SECTION 05 51 00

METAL STAIRS AND LADDERS

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\*\* NOTE TO SPECIFIER \*\* Precision Ladders, LLC; ladders and stairs.  
This section is based on the products of Precision Ladders, LLC, which is located at:P. O. Box 2279Morristown, TN 37816-2279Toll Free Tel: 800-225-7814Tel: 423-586-2265Fax: 423-586-2091Email: [request info (matt@precisionladders.com)](https://arcat.com/rfi?action=email&company=Precision%252BLadders%252C%252BLLC&message=RE%253A%2520Spec%2520Question%2520(05510pll)%253A%2520&coid=34924&spec=05510pll&rep=&fax=423-586-2091)  
Web: <https://precisionladders.com>   
 [ [Click Here](https://arcat.com/company/precision-ladders-llc-34924) ] for additional information.  
Automatic Electric Disappearing Stairway: Precision offers the best automatic stairway on the market. In the open position - as sturdy as any fixed stair and just as easy to climb with its 52 degree pitch. The Automatic Electric Stairway can be opened or closed with a simple toggle switch. The unit can be supplied with a key operated switch in areas where security is important. As with the Super Simplex, these units can be fabricated with a custom frame to accommodate dropped ceilings. Other optional equipment include a wood veneer door panel with mineral core, warning buzzer to sound when stairway is in motion, emergency manual operation to lower the unit from above and/or below.   
Super Simplex Disappearing Stairway: A commercial-grade aluminum folding stairway, is the most structurally superior product of its kind on the market today. Its primary use is for attic access, but when used in conjunction with a Precision Roof Hatch can be used for access to a rooftop.   
Availability of optional 2-HOUR FIRE-RATING for use in a fire-rated ceiling.  
The Super Simplex is the only stairway available with a frame complete with built-in treads custom fabricated to your exact distance from ceiling to floor above thereby accommodating dropped ceilings.  
For secure access to your rooftop equipment, we offer a package unit consisting of a folding stairway, a custom frame to fit distance from ceiling to roof and a custom roof hatch factory-mounted to the top of the frame. This entire unit can then be dropped in from above, secured and flashed in for safe, comfortable roof access.  
The Super Simplex is so reliable you can reclaim attic space for storage purposes without the need for a permanent stairway. Many national companies are already using the Super Simplex to maximize use of attic space. Some typical applications are: airport control towers, banks, better residences, bottling plants, churches, drug stores, government buildings, hospitals, laboratories, libraries, museums, restaurants, schools and retail stores.   
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1. GENERAL
   1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Aluminum alternating tread stairs.
    2. Automatic electric disappearing stairway.
    3. Automatic disappearing stairway.
    4. Semi-automatic disappearing stairway.
    5. Manual disappearing stairway.
    6. Fixed aluminum industrial stairs.
    7. Aluminum fixed vertical ladders.
    8. Aluminum heavy duty fixed vertical ladders.
    9. Metal roof hatches with attached folding aluminum guard rail system.
    10. Metal roof hatches with integral curbs.
    11. Aluminum ships stairs.
    12. Guard rail systems.
    13. Ladder safety posts.
  1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 05 12 13 - Architecturally-Exposed Structural Steel Framing.
    2. Section 05 12 13 - Architecturally-Exposed Structural Steel Framing.
    3. Section 05 55 00 - Metal Stair Treads and Nosings.
    4. Section 06 10 00 - Rough Carpentry.
    5. Section 07 42 00 - Wall Panels.

\*\* NOTE TO SPECIFIER \*\* Manual model only on 2 hour fire-rated model. Delete if not required.

* + 1. Section 08 31 13 - Access Doors and Frames.

\*\* NOTE TO SPECIFIER \*\* Automatic model only. Delete if not required.

* + 1. Section 26 05 00 - Common Work Results for Electrical.
  1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. ANSI A14.3: Ladders - Fixed - Safety Requirements.
    2. ANSI A14.9: Safety Requirements for Ceiling Mounted Disappearing Climbing Systems.
    3. OSHA 1910.23: Ladders.
    4. OSHA 1910.25: Stairways.
    5. OSHA 1910.28: Duty to have fall protection and falling object protection.
    6. OSHA 1910.29: Fall protection systems and falling object protection-criteria and practices.
  1. SUBMITTALS
     1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
     2. Product Data: Manufacturer's data sheets on each product to be used, including:
        1. Preparation instructions and recommendations.
        2. Storage and handling requirements and recommendations.
        3. Installation methods.

\*\* NOTE TO SPECIFIER \*\* Delete below if no stairs.

* + 1. Shop Drawings for Stairs:
       1. Plan and section of stair installation.
       2. Indicate rough opening dimensions for ceiling and/or roof openings.

\*\* NOTE TO SPECIFIER \*\* Delete below if no ladders.

* + 1. Shop Drawings for Ladders:
       1. Plan and section of ladder installation.
    2. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square representing actual product, color, and patterns.
  1. QUALITY ASSURANCE
     1. Manufacturer Qualifications: Minimum 5 year experience manufacturing similar products.
     2. Installer Qualifications: Minimum 2 year experience installing similar products.

\*\* NOTE TO SPECIFIER \*\* Include a mock-up if the project size and/or quality warrant taking such a precaution. The following is one example of how a mock-up on a large project might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.

* + 1. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
       1. Finish areas designated by Architect.
       2. Do not proceed with remaining work until workmanship is approved by Architect.
       3. Rebuild mock-up area as required to produce acceptable work.
  1. PRE-INSTALLATION MEETINGS
     1. Convene minimum two weeks prior to starting work of this section.
  2. DELIVERY, STORAGE, AND HANDLING
     1. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.
     2. Store products in manufacturer's unopened packaging until ready for installation. Store stairway until installation inside under cover. If stored outside, under a tarp or suitable cover.
     3. Handle materials to avoid damage.
  3. PROJECT CONDITIONS
     1. Maintain environmental conditions including temperature, humidity, and ventilation within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.
  4. SEQUENCING
     1. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.
  5. WARRANTY
     1. Limited Warranty: Provide manufacturer's standard limited five year warranty against defective material and workmanship, covering parts only, no labor or freight. Defective parts, if deemed so by the manufacturer, will be replaced at no charge, freight excluded, upon inspection at manufacturer's plant which warrants same.

1. PRODUCTS
   1. MANUFACTURERS
      1. Manufacturer: Precision Ladders, LLC, which is located at: P. O. Box 2279 ; Morristown, TN 37816-2279; Toll Free Tel: 800-225-7814; Tel: 423-586-2265; Email: info@PrecisionLadders.com; Web: [www.PrecisionLadders.com](http://www.PrecisionLadders.com)

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
    2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. ALUMINUM ALTERNATING TREAD STAIRS
     1. Aluminum Alternating Tread Stair and Components: Ladder, mounting brackets and handrails on both sides.
        1. Model: Model AT Aluminum Alternating Stair Ladder as manufactured by Precision Ladders, LLC.
        2. Capacity: Unit shall support a 1000 lb (227 Kg) total load without failure,
        3. Performance Standard: Units shall be designed and manufactured to meet or exceed OSHA 1910.25.
        4. Stair Side Stringers: 3 inch by 2 inch by 1/8 inch (76 mm by 51 mm by 3 mm) extruded 6005-T5 aluminum tubing.

\*\* NOTE TO SPECIFIER \*\* Delete pitch options not required.

* + - * 1. Pitch: 56 degrees.
        2. Pitch: 68 degrees.
      1. Stair Center Stringer: 10 inch by 1/4 inch (254 mm by 6 mm) extruded 6005-T5 aluminum flat bar. Neoprene trim adhered to front edge of center stringer to protect climber.
      2. Stair Treads: 1 inch aluminum bar grating,
         1. Hatch Access Models: 9-13/16 inch (249 mm) deep by 9-7/8 inch (250 mm) wide.
         2. Walk-Thru Models: 9-13/16 inch (249 mm) deep by 11-7/8 inch (302 mm) wide.
      3. Stair Mounting Brackets: 6 x 1/4 inch (153 x 6 mm) aluminum flat bar.
      4. Handrails: 1-1/4 inches (32 mm) Schedule 40, 6005-T5 aluminum pipe provided with internal aluminum fittings.

\*\* NOTE TO SPECIFIER \*\* Delete finish options not required.

* + - 1. Finish: Mill finish.
      2. Finish: Powder coated.
      3. Finish: Clear anodized.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. AUTOMATIC ELECTRIC DISAPPEARING STAIRWAY
     1. Automatic Electric Disappearing Stairway and Components: Stairway, rail, frame, door, drive unit, motor and controls/junction box.
        1. Model: Model AE as manufactured by Precision Ladders LLC,
        2. Capacity: Unit shall support a 1000 lb (453 Kg) load without failure.
        3. Performance Standard: Unit shall comply with ANSI A14.9; Commercial Type, for a rough opening of 30 inches (762 mm) and Residential Type, for a rough opening of 30 inches (762 mm).
     2. Components:
        1. Ceiling Opening for Height Up to 14 feet (4267 mm): 30 x 72 inches (762 x 1829).
        2. Ceiling Opening for Height Greater than 14 feet (4267 mm): 30 x 84 inches (762 x 2134).
        3. Stairway Stringer: 7 inches by 0.230 inch (178 mm by 5.8 mm) extruded aluminum channel. Steel rollers at base of each stringer. Pitch: 52 degree.
        4. Stairway Tread: Aluminum channel 6 inches by 20-3/16 inches by 0.225 inch (152 mm by 513 mm by 5.7 mm). Nonskid safety material at walking surface.
        5. Riser Height: 9-1/2 inches (241 mm) maximum.
        6. Clear Tread Width: 16-5/8 inches (422 mm).
        7. Railing: Hand/guide rail 1-1/16 inches (27 mm) OD both sides, galvanized.
        8. Frame: 1/8 inch (3 mm) steel formed channel. Height to suit total ceiling thickness.
        9. Door: 1/8 inch (3 mm) aluminum panel. Steel piano hinge.
        10. Drive Unit: 1/3 horsepower (246 W), 115 volt instantly reversible motor direct-connected to a reduction gear drive, complete with contactors. Pre-wired control switches. Sealed ball bearing guides. Double 1/8 inch (3 mm) aircraft cable drive.
        11. Finishes: Mill finish on aluminum stairway components. Prime coat on frame. Galvanized handrails.
     3. Accessories:

\*\* NOTE TO SPECIFIER \*\* Optional. Delete if not required.

* + - 1. Standard toggle wall mounted switch or key-operated switch.
      2. Battery back-up power to open the stair in the event of a power failure.

\*\* NOTE TO SPECIFIER \*\* Optional. Delete if not required.

* + - 1. Warning buzzer sounds when stairway is in motion.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. AUTOMATIC DISAPPEARING STAIRWAY

\*\* NOTE TO SPECIFIER \*\* Substitute \*\* with total vertical height of stairway in inches.

* + 1. Super Simplex Disappearing Stairway: With fully automatic electrical operation of door panel opening/closing and unfolding/folding of the stairway sections as manufactured by Precision Ladders LLC.
       1. Model: S4\*\* as manufactured by Precision Ladders, LLC.
    2. Design:
       1. Performance Standard: Unit shall comply with ANSI A14.9, Commercial Type, for a rough opening of 30 inches (762 mm) and Residential Type, for a rough opening of 30 inches (762 mm).
       2. Capacity: Unit shall support a 500 lb (227 kg) total load without failure.
    3. Components:
       1. Ceiling Opening:
          1. Ceiling height of 9 feet 9 inches (2972 mm) or less requires an opening of 30 inches X 54 inches (762 mm X1372 mm).
          2. Ceiling heights from 9 feet 10 inches - 12 feet 0 inch (2997 mm - 3658 mm) require opening of 30 inches X 64 inches (762 mm X 1626 mm).
          3. Ceiling heights from 12 feet 1 inch - 13 feet 6 inches (3683 mm - 4115 mm) require opening of 30 inches X 72 inches (762 mm X 1829 mm).
       2. Stairway Stringer: 6005-T5 Extruded aluminum channel 5 inches X 1 inch X 1/8 inch (127 mm X 25 mm X 3 mm); tri-fold design; steel blade type hinges; 1/2 inch (13 mm) adjustable feet with rubber rollers. Pitch shall be 63 degree.
       3. Stairway Tread: 6005-T5 extruded aluminum channel 5-3/16 inches by 1-1/4 inches by 1/8 inch (132 mm X 32 mm X 3 mm). Depth is 5-3/16 inches (132 mm). Deeply serrated top surface. Riser Height: 9-1/2 inches (241 mm). Clear Tread Width: 16-1/2 inches (419 mm).
       4. Railing: Aluminum tube, upper section only.
       5. Frame:
          1. If ceiling to floor or roof deck above is 12 inches (305 mm) or less, frame shall be 1/8 inch (3 mm) steel formed channel, box.
          2. When ceiling to floor or roof deck above is greater than 12 inches (305 mm), the frame shall be 1/8 inch (3 mm) steel, 63 degree (with built-in steps) on the hinge end, 90 degree on the other end, custom depth to fill distance from ceiling to floor above. This custom frame will require a longer opening in the floor above than is required at the ceiling level.
          3. When exit is to a roof deck, the frame must be 39 inches (991 mm) deep.
       6. Door Panel:
          1. Standard, non-fire rated, door shall be constructed of 1/8 inch (3 mm) aluminum sheet attached to stairway frame with a steel piano hinge. Door overlaps bottom flange of frame.
       7. Hardware:
          1. Steel blade type hinge connecting stringer sections. Zinc plated and chromate sealed.
          2. Steel operating arms, both sides. Zinc plated and chromate sealed.
          3. Double acting steel springs and cable, both sides.
          4. Rivets rated at 1100 lb (499 kg) shear strength each.
          5. Steel section alignment clips at stringer section joints.
          6. Molded rubber guards at corners of aluminum door panel.
       8. Motor: 110 volt
       9. Finishes: Mill finish on aluminum stairway components. Prime coat on steel frame.
    4. Accessories:
       1. Keyless keypad operation.
       2. Push button operation.
       3. Battery back-up.
       4. Emergency release cable, accessible from ground level.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. SEMI-AUTOMATIC DISAPPEARING STAIRWAY

\*\* NOTE TO SPECIFIER \*\* Substitute \*\* with total vertical height in inches.

* + 1. Semi-Automatic Disappearing Stairway: Model S3\*\* as manufactured by Precision Ladders LLC.
    2. Design:
       1. Performance Standard: Unit shall comply with ANSI A14.9, Commercial Type, for a rough opening of 30 inches (762 mm) and Residential Type, for a rough opening of 30 inches (762 mm).
       2. Stairway capacity shall be rated at 500 lb (227 Kg).
    3. Components:
       1. Ceiling Opening:
          1. Ceiling height of 9 feet 9 inches (2972 mm) or less requires an opening of 30 inches X 54 inches (762 mm X1372 mm).
          2. Ceiling heights from 9 feet 10 inches - 12 feet 0 inch (2997 mm - 3658 mm) require opening of 30 inches X 64 inches (762 mm X 1626 mm).
          3. Ceiling heights from 12 feet 1 inch - 13 feet 6 inches (3683 mm - 4115 mm) require opening of 30 inches X 72 inches (762 mm X 1829 mm).
          4. Ceiling heights from 13 feet 7 inches - 15 feet 0 inch (4140 mm - 4572 mm) require opening of 30 inches X 90 inches (762 mm X 2286 mm).
          5. Ceiling heights from 15 feet 1 inch - 16 feet 0 inches (4597 mm - 4877 mm) require opening of 30 inches X 108 inches (762 mm X 2743 mm).
       2. Stairway Stringer: 6005-T5 Extruded aluminum channel 5 inches X 1 inch X 1/8 inch (127 mm X 25 mm X 3 mm); tri-fold design; steel blade type hinges; 1/2 inch (13 mm) adjustable feet with plastic Mar-guard. Pitch shall be 63 degree.
       3. Stairway Tread: 6005-T5 extruded aluminum channel 5-3/16 inches by 1-1/4 inches by 1/8 inch (132 mm X 32 mm X 3 mm). Depth is 5-3/16 inches (132 mm). Deeply serrated top surface.
       4. Riser Height: 9-1/2 inches (241 mm).
       5. Clear Tread Width: 16-1/2 inches (419 mm).
       6. Railing: Aluminum tube, upper section only.
       7. Frame:
          1. If ceiling to floor (or roof deck) above is 12 inches (305 mm) or less, frame shall be 1/8 inch (3 mm) steel formed channel.
          2. When ceiling to floor (or roof deck) above is greater than 12 inches (305 mm), the frame shall be 1/8 inch (3 mm) steel, 63 degree (with built-in steps) on the hinge end, 90 degree on the other end, custom depth to fill distance from ceiling to floor above. This custom frame will require a longer opening in the floor above than is required at the ceiling level.
          3. When exit is to a roof deck, the frame must be 39 inches (991 mm) deep.
       8. Door Panel:
          1. Standard (non-fire rated) door shall be constructed of 1/8 inch (3 mm) aluminum sheet attached to stairway frame with a steel piano hinge. Door overlaps bottom flange of frame.
       9. Hardware:
          1. Steel blade type hinge connecting stringer sections. Zinc plated and chromate sealed.
          2. Steel operating arms, both sides. Zinc plated and chromate sealed.
          3. Double acting steel springs and cable, both sides.
          4. Rivets rated at 1100 lb (499 kg) shear strength each.
          5. Steel section alignment clips at stringer section joints.
          6. Molded rubber guards at corners of aluminum door panel.
       10. Motor: 110 volt
       11. Finishes: Mill finish on aluminum stairway components. Prime coat on steel frame.
       12. Accessories:
           1. Keyless keypad operation.
           2. Push button operation.
           3. Battery back-up.
           4. Emergency release cable, accessible from ground level.
           5. Steel pole to aid in folding and unfolding stairway sections.
           6. Stairs for ceiling heights of 9 feet 10 inches to 12 feet 0 inches (2997 to 3658 mm) shall be equipped with a Precision Fold Assist to aid in folding and unfolding stairs.
           7. Stairs for ceiling heights of 12 feet 1 inches to 16 feet 0 inches (3683 to 4877 mm) shall be equipped with a 2 Precision Fold Assists to aid in folding and unfolding stairs.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. MANUAL DISAPPEARING STAIRWAY
     1. Manual Disappearing Stairway: Product: Super Simplex Disappearing Stairway as manufactured by Precision Ladders LLC

\*\* NOTE TO SPECIFIER \*\* Substitute \*\* with total vertical height in inches. Delete model not required.

* + - 1. Model 1\*\*: Stairs for Ceiling Heights 7 feet-0 inch - 12 feet-0 inch (2134 mm - 3658 mm):
      2. Model 2\*\*: Stairs for Ceiling Heights 12 feet-1 inch - 13 feet-6 inches (3683 mm - 4115 mm):
    1. Performance Standard: Unit shall comply with ANSI A14.9, Commercial Type, for rough openings between 27 inches to 39 inches (686 mm to 991 mm). Residential Type for rough openings between 22-1/2 inches to 27 inches (572 mm to 686 mm). Stairway capacity shall be rated at 500 lb (227 Kg).
    2. Components:
       1. Ceiling Opening:
          1. Ceiling height of 9 feet 9 inches (2972 mm) or less requires an opening of 30 inches X 54 inches (762 mm X1372 mm).
          2. Ceiling heights from 9 feet 10 inches - 12 feet 0 inch (2997 mm - 3658 mm) require opening of 30 inches X 64 inches (762 mm X 1626 mm).
          3. Ceiling heights from 12 feet 1 inch - 13 feet 6 inches (3683 mm - 4115 mm) require opening of require opening of 22-1/2 inches X 72 inches (572 mm X1829 mm).
       2. Stairway Stringer: 6005-T5 Extruded aluminum channel 5 inches X 1 inch X 1/8 inch (127 mm X 25 mm X 3 mm) tri-fold design; steel blade type hinges; adjustable feet with plastic Mar-guard. Pitch shall be 63 degree.
       3. Stairway Tread: 6005-T5 extruded aluminum channel 5-3/16 inches X 1-1/4 inches X 1/8 inch (132 mm X 32 mm X 3 mm). Depth is 5-3/16 inches (132 mm). Deeply serrated top surface. Riser Height: 9-1/2 inches (241 mm). Clear Tread Width for Standard Width: 18 inches (457 mm).
       4. Railing: Aluminum bar handrail riveted to stringers, upper section only.
       5. Frame:
          1. When ceiling to floor or roof deck above is under 12 inches (305 mm) frame shall be 1/8 inch (3 mm) steel formed channel, box.
          2. When ceiling to floor or roof deck above is 12 inches (305 mm) or greater, the frame shall be 1/8 inch (3 mm) steel, 63 degree (with built-in steps) on the hinge end, 90 degree on the other end, custom depth to fill distance from ceiling to floor above. The custom frame shall require a longer opening in the floor above than shall be required at the ceiling level.
       6. Door Panel:

\*\* NOTE TO SPECIFIER \*\* Delete door panel not required.

* + - * 1. Standard, non-fire rated, door shall be constructed of 1/8 inch (3 mm) aluminum sheet attached to stairway frame with a steel piano hinge. Door overlaps bottom flange of frame. Eye bolt accommodates pole for opening and closing door.
        2. On fire-rated models, the door panel shall be constructed of 20 gauge steel and have a 2 hour fire rating for use in fire-rated ceiling assemblies as issued by Warnock-Hersey or other appropriate independent testing/licensing agency.
      1. Hardware:
         1. Steel blade type hinge connecting stringer sections. Zinc plated and chromate sealed.
         2. Steel operating arms, both sides. Zinc coat with clear trivalent chromate.
         3. Double acting steel springs and cable, both sides.
         4. Rivets rated at 1100 lb (499 Kg) shear strength each.
         5. Steel section alignment clips at stringer section joints.
         6. Molded rubber guards at corners of aluminum door panel.
      2. Finish: Mill finish on aluminum stairway components. Prime coat on frame.
    1. Accessories:
       1. Steel pole to aid opening and closing stairways.

\*\* NOTE TO SPECIFIER \*\* Precision Fold-Assist is optional on stairways for ceiling heights of 9' 9" and below.

* + - 1. Stairs for ceiling heights 9' -10" - 12' -0" shall be equipped with a patented Precision Fold Assist to aid in folding and unfolding of sections.
      2. Stairs for ceiling heights 12' 1" - 13'6" shall be equipped with 2 Precision Fold Assists.

\*\* NOTE TO SPECIFIER \*\* Standard on fire-rated models, optional on non-fire-rated models. Delete if not required.

* + - 1. Keyed lock for door.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. FIXED ALUMINUM INDUSTRIAL STAIRS

\*\* NOTE TO SPECIFIER \*\* Substitute \*\* with total vertical height in inches.

* + 1. Fixed Aluminum Industrial Stair: Precision Ladders Fixed Aluminum Industrial Stairway shall be Model PS-\*\* as manufactured by Precision Ladders, LLC.
       1. Performance Standard: Units shall be designed and manufactured to meet or exceed OSHA 1910.25.
       2. Capacity: Supports a load of 1000 lb (454 kg) without failure.
       3. Degree of Incline: 30 to 45 degrees.
       4. Riser height and tread depth shall be uniform between landings.
       5. Stringers: Extruded aluminum structural channel 8 inches X 2.29 inches X 1/4 inch (203 mm X 58 mm X 6 mm).

\*\* NOTE TO SPECIFIER \*\* Delete tread options not required.

* + - 1. Treads: Aluminum bar grating treads to be both welded and bolted to stringer.
      2. Treads: Aluminum, 3003-H14, formed anti-slip plate.
      3. Tread mounting hardware: 3/8 inch (9.5 mm) round stainless steel hex bolts.

\*\* NOTE TO SPECIFIER \*\* Optional. Delete if not required.

* + - 1. Crossover stair with platform between two stairs.
      2. Mounting Brackets:
         1. Floor Brackets: 4 inches X 4 inches X 1/4 inch (102 mm X 102 mm X 6 mm) aluminum angle.
         2. Top Brackets: 4 inches to 6 inches tall X 2 inches (102 mm X 152 mm X 51 mm) mounting flange X 1/4 inch (6 mm) thick X 6 inches X 10 inches (152 mm X 254 mm) long aluminum angle. Top mounting bracket size is determined by stair's rise & run.
    1. Handrail:
       1. 1-1/4 inches (32 mm) Schedule 40 aluminum pipe,6005-T5, providing a 1.6 inch (41 mm) OD.
       2. Internal aluminum fittings. Welds will be raised but smooth.
    2. Platform:
       1. Surface: Aluminum,6005-T5, bar grating treads.
       2. Toe Boards: 4 x 1/4 inch (102 x 6 mm) aluminum, 6005-T5.
       3. Handrails: 1-1/4 inches (32 mm) Schedule 40 aluminum pipe,6005-T5, providing a 1.6 inch (41 mm) OD.

\*\* NOTE TO SPECIFIER \*\* Delete finish option not required.

* + 1. Finish: Mill finish.
    2. Finish: Powder coated.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. ALUMINUM FIXED VERTICAL LADDERS
     1. Aluminum Fixed Vertical Ladder and Components: Ladder, fall arrest system, walk-thru, side rails, cage, rest platforms, floor mounting brackets, security doors, security gates and finishes.

\*\* NOTE TO SPECIFIER \*\* Fill in the blank below with total vertical height in inches.

* + - 1. Model: Model FL-\_\_\_ Aluminum Fixed Vertical Ladder as manufactured by Precision Ladders LLC.
      2. Capacity: Unit shall support a 1,500 lb (680 Kg) loading without failure.
      3. Performance Standard: Units shall be designed and manufactured to meet or exceed ANSI A14.3 and OSHA 1910.23, 1910.28, and 1910.29.
    1. Components:
       1. Ladder Stringer: 2-1/2 x 1-1/16 x 1/8 inch (64 x 27 x 3 mm) extruded 6005-T5 aluminum channel. Pitch: 90 degrees.
       2. Ladder Tread: 2-1/4 x 3/4 x 1/4 inch (57 x 19 x 6 mm) extruded 6005-T5 aluminum with deeply serrated top surface.
       3. Ladder Mounting Bracket: 8-1/2 x 2 x 3 x 1/4 inch thick (216 x 51 x 76 x 6 mm) aluminum angle.
       4. Fall Arrest System: Complete system with rail, sleeves, and harness to limit any fall to 6 inches (152 mm). Removeable Post for Hatch Access Ladders with Fall Arrest System. Harness by others.
       5. Walk-Thru:
          1. Hand Rails: 1-1/4 inch (32 mm) aluminum square tube with rounded edges.
          2. Mounting Brackets: 4 x 4 x 1/4 inch (102 x 102 x 6 mm) aluminum.
          3. Side Rails: 42 inch (1067 mm) side rail extension for through ladder exits.
       6. Safety Cage: Vertical and Horizontal Bars: 1/4 x 2 inch (6 x 51 mm) 6005-T5 aluminum flat bar.
       7. Rest Platform:
          1. Material: Bar grating.
          2. Platform Size: 30 x 48 inches (762 x 1219 mm) standard.
          3. Toe Boards. 6005 T-5 aluminum.
          4. Handrails: 1-1/4 inches (32 mm) aluminum square tube 42 inches (1067 mm) high.
       8. Security Door: 0.125 inch (3 mm) 3003-H14 aluminum panel 84 inches (2134 mm) tall with padlock provision.
       9. Security Gate: Hinged gate at bottom of cage with padlock provision.
       10. Floor Brackets: Floor bracket at foot of each stringer, 3 x 2 x 1/4 inch (76 x 51 x 6 mm).

\*\* NOTE TO SPECIFIER \*\* Delete finish not required.

* + - 1. Finish: Mill finish; standard.
      2. Finish: Powder coated.
      3. Finish: Clear anodized.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. ALUMINUM HEAVY DUTY FIXED VERTICAL LADDERS
     1. Aluminum Heavy Duty Fixed Vertical Ladder and Components: Ladder, fall arrest system, walk-thru, side rails, cage, rest platforms, floor mounting brackets, security doors, security gates and finishes.

\*\* NOTE TO SPECIFIER \*\* Replace the blank below with the total vertical height of the ladder in inches.

* + - 1. Model: Model FLH-\_\_\_\_. Aluminum Heavy Duty Fixed Vertical Ladder as manufactured by Precision Ladders, LLC.
      2. Capacity: Unit shall support a 1500 lb (680 Kg) loading without failure, and individual treads shall withstand a 3,000 lb (1361 Kg) loading without failure.
      3. Performance Standard: Units designed and manufactured shall meet or exceed ANSI A14.3 and OSHA 1910.23, 1910.28, and 1910.29.
    1. Components:
       1. Ladder Stringer: 3 inch by 1 inch by 1/8 inch (64 mm by 27 mm by 3 mm) extruded 6005-T5 aluminum tubing. Pitch: 90 degrees.
       2. Ladder Tread: 2-1/4 inch by 3/4 inch by 1/4 inch (57 mm by 19 mm by 6 mm) extruded 6005-T5 aluminum with deeply serrated top surface.
       3. Ladder Mounting Bracket: 8-1/2 inch by 2 inch by 3 inch by 1/4 inch thick (216 mm by 51 mm by 76 mm by 6 mm) aluminum angle.
       4. Fall Arrest System: Complete system with rail, sleeves, and harness to limit any fall to 6 inches (152 mm). Removeable Post for Hatch Access Ladders with Fall Arrest System. Harness by others.
       5. Walk-Thru:
          1. Handrails: 1-1/4 inch (32 mm) aluminum square tube with rounded edges.
          2. Side Rails: 42 inch (1067 mm) side rail extension for through ladder exits.
          3. Flared: 30 inches (762 mm) wide for ladders with fall arrest system.
       6. Safety Cage: Vertical and Horizontal Bars: 1/4 inch by 2 inch (6 mm by 51 mm) 6005-T5 aluminum flat bar.
       7. Rest Platform:
          1. Bar grating.
          2. Platform Size: 30 inches by 48 inches (762 mm by 1219 mm) standard.
          3. Toe Boards: 6005 T-5 aluminum.
          4. Handrails: 1-1/4 inch (32 mm) aluminum square tube 42 inches (1067 mm) high.
       8. Security Door: 0.125 inch (3 mm) 3003-H14 aluminum panel 84 inches (2134 mm) tall with padlock provision.
       9. Security Gate: Hinged gate at bottom of cage with padlock provision.
       10. Floor Brackets: Floor bracket at foot of each stringer, 3 X 2 x 1/4 inch (76 x 51 x 6 mm).

\*\* NOTE TO SPECIFIER \*\* Delete finish not required. Mill finish is standard.

* + - 1. Finish: Mill finish.
      2. Finish: Powder coated.
      3. Finish: Clear anodized.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. METAL ROOF HATCH WITH ATTACHED FOLDING ALUMINUM GUARD RAIL SYSTEM

\*\* NOTE TO SPECIFIER \*\* Delete roof hatch material type not required.

* + 1. Roof Hatch: Model PH-G: 2 feet 6 inches X 3 feet 0 inches (762 mm X 914 mm) (galvanized steel) as manufactured by Precision Ladders, LLC.
    2. Roof Hatch Model PH-A: 2 feet 6 inches X 3 feet 0 inches (762 mm X 914 mm) (aluminum) as manufactured by Precision Ladders, LLC.
    3. Folding Aluminum Guard Rail System: Model AGRS-X: 2 feet 6 inches X 3 feet 0 inches (762 mm X 914 mm) (for folding) as manufactured by Precision Ladders, LLC.
    4. System Description:
       1. The roof hatch shall have a clear opening as shown on the drawings, and shall consist of an insulated cover and frame. Corners shall be fully welded and ground smooth. A gasket between cover and frame shall create a weather tight seal.
       2. The Folding Aluminum Guard Rail System will be attached to the outside of the roof hatch curb. While the roof hatch cover is closed, the Folding Aluminum Guard Rail System will be horizontal to the roof deck. While the roof hatch cover is opened, the Folding Aluminum Guard Rail System will be vertical to the roof deck protecting the exposed opening. Material shall be aluminum (6005-T5) 1-1/4 inches (32 mm) Schedule 40 Pipe with a 1-5/8 inches (41 mm) OD. Finish as indicated.
    5. Performance:
       1. Compliant with OSHA 1910.23, OSHA 1910.28, and OSHA 1910.29.
       2. Cover shall be reinforced to support a minimum live load of 40 psf (195kg/m2) with a maximum deflection of .67% of the span and a 20 psf (97 kg/m2) wind uplift.
       3. Operation of the cover shall be smooth and easy with controlled operation throughout the entire arc of opening and closing.
       4. Operation of the cover shall not be affected by temperature.
       5. Entire hatch shall be weather tight with fully welded corner joints on cover and curb.
    6. Curb:

\*\* NOTE TO SPECIFIER \*\* Delete curb material not required to match roof hatch material.

* + - 1. Material: Formed from 14 gauge galvanized steel of lock forming quality per ASTM A-525 with G90 coating.
      2. Material: Formed from.090 Aluminum H-14 3003.
      3. Insulation: 1 inch (25 mm) rigid fiber board insulation.
      4. Height: 12 inches (305 mm) typical unless indicated otherwise on drawings.
      5. Curb Flange: 4 inches (102 mm) integral flange for securing to roof.
      6. Hinges Connecting Curb to Door: 1/8 inch (3 mm), 2 piece formed steel with 3/8 inch (9.5 mm) pivot pin.
      7. Seal: Extruded rubber gasket within a 20 gauge extruded aluminum track securely attached to the frame to make the unit weather tight.
    1. Cover:
       1. Material: 14 gauge formed galvanized steel of lock forming quality per ASTM A-525 with G90 coating.
       2. Liner shall be 22 gauge galvanized steel with G90 coating.
       3. Insulation between cover and liner to be 1 inch (25 mm) thick U.L. plain fiberglass 0.75# density.
       4. Lid shall be reinforced as required with 11 ga. steel channel.
       5. A one point cab lock is to be provided with a built-in inside handle.
       6. Exterior of cover shall be devoid of hardware with the exception of the outside handle and folding aluminum guard rail system attachment point(s).
       7. Outside handle shall be vinyl coated, steel T-handle.
       8. Automatic hold-open device shall be formed from 3/16 inch (4.8 mm) steel flat bar and 1/2 inch (13 mm) diameter steel round stock with a vinyl grip.
       9. Padlock provisions provided on both interior and exterior of unit.
       10. Extruded rubber gasket shall be securely attached to the liner, thus providing a weather-tight seal.
    2. Pressure Control:
       1. Opening/closing assistance/resistance on all models shall be provided with pressure intensifiers consisting of a telescoping tube; the top (outer) tube shall be 1-5/16 inches (33 mm), bottom (inner) tube shall be 1-1/2 inches (38 mm). Tubes shall be cadmium plated and chromate-sealed.
    3. Folding Aluminum Guard Rail System:
       1. Rails shall be all Aluminum (6005-T5) 1-1/4 inches (32 mm) Schedule 40 Pipe with a
       2. 1-5/8 inches (42 mm) OD.
       3. Mounting Bracket: 1-1/4 x 1/8 inch (32 x 4 mm) aluminum square tubing.
       4. Support a load of 200 lb (91 kg) applied in any direction.
       5. Self-Closing Gate. 1-1/4 inches (32 mm) Schedule 40 Pipe with 1-5/8 inch (42 mm) OD, hinged on open side.
    4. Hardware:
       1. Roof Hatch:

\*\* NOTE TO SPECIFIER \*\* Delete hardware material not required.

* + - * 1. Corrosion resistant hardware and fasteners.
        2. Stainless Steel hardware and fasteners.
      1. Folding Aluminum Guard Rail System:
         1. Corrosion resistant hardware and fasteners.
    1. Fabrication:
       1. The hatch with attached folding aluminum guard rail system shall be completely fabricated ready for installation before shipment to the site.
    2. Finish:
       1. Roof Hatch:

\*\* NOTE TO SPECIFIER \*\* Delete hatch finish not required.

* + - * 1. Finish: Mill Finish, aluminum.
        2. Finish: Red oxide primer, galvanized.
        3. Finish: Powder Coat Finish, custom.
      1. Folding Aluminum Guard Rail System:

\*\* NOTE TO SPECIFIER \*\* Delete guard rail finish not required.

* + - * 1. Finish: Mill Finish, standard.
        2. Finish: Powder Coat Finish, mill finish on pivot parts.
    1. Source Quality Control:
       1. Products shall be inspected at factory.
       2. Products shall be tested in factory for proper operation before shipment.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. METAL ROOF HATCHES WITH INTEGRAL CURB

\*\* NOTE TO SPECIFIER \*\* Delete model not required.

* + 1. Roof Hatch with Integral Curb: PH-G, galvanized steel roof hatch as manufactured by Precision Ladders, LLC.
    2. Roof Hatch with Integral Curb: PH-A, aluminum roof hatch as manufactured by Precision Ladders, LLC.
    3. Performance:
       1. Performance Standard: Unit shall comply with OSHA 1910.23 and OSHA 1910.28.
       2. Cover shall be reinforced to support a minimum live load of 40 psf (195kg/m2) with a maximum deflection of .67% of the span and a 20 psf (97 kg/m2) wind uplift.
       3. Operation of the cover shall be smooth and easy with controlled operation throughout the entire arc of opening and closing.
       4. Operation of the cover shall not be affected by temperature.
       5. Entire hatch shall be weather tight with fully welded corner joints on cover and curb.
    4. Curb:

\*\* NOTE TO SPECIFIER \*\* Delete curb material not required to match roof hatch material.

* + - 1. Material: Formed from 14 gauge galvanized steel of lock forming quality per ASTM A-525 with G90 coating.
      2. Material: Formed from.090 Aluminum H-14 3003.
      3. Insulation: 1 inch (25 mm) rigid fiber board insulation.
      4. Height: 12 inches (305 mm) typical, unless indicated otherwise on drawings.
      5. Curb Flange: 4 inches (102 mm) integral flange for securing to roof.
      6. Hinges Connecting Curb to Door: 1/8 inch (3 mm), 2 piece formed steel with 3/8 inch (9.5 mm) pivot pin.
      7. Seal: Extruded rubber gasket within a 20 gauge extruded aluminum track securely attached to the frame to make the unit weather tight.

\*\* NOTE TO SPECIFIER \*\* Delete cover option not required.

* + 1. Cover:
       1. Material: .090 Aluminum H-14 3003.
       2. Liner: .040 Aluminum H-14 3003.
       3. Insulation between cover and liner shall be 1 inch (25 mm) thick U.L. plain fiberglass 0.75# density.
       4. Lid shall be reinforced as required with.090 Aluminum H-14 3003 channel.
       5. A one point cab lock shall be provided with a built-in inside handle on units with a length of 4 feet-6 inches (1372 mm) or less. On units of greater length, a 2 point slam lock shall be used.
       6. Exterior of cover shall be devoid of hardware with the exception of the outside handle.
       7. Outside handle shall be vinyl coated, steel T-handle.
       8. Automatic hold-open device shall be formed from 3/16 inch (4.8 mm) steel flat bar and 1/2 inch (13 mm) diameter steel round stock with a vinyl grip.
       9. Padlock provisions provided on both interior and exterior of unit.
       10. Extruded rubber gasket shall be securely attached to the liner, providing a weather-tight seal.
    2. Cover:
       1. Formed from 14 gauge galvanized steel of lock forming quality per ASTM A-525 with G90 coating.
       2. Liner: 22 gauge galvanized steel with G90 coating.
       3. Insulation between cover and liner to be 1 inch (25 mm) thick U.L. plain fiberglass 0.75# density.
       4. Lid shall be reinforced as required with 11 ga. steel channel.
       5. A one point cab lock is to be provided with a built-in inside handle on units with a length of 4 feet-6 inches (1372 mm) or less. On units of greater length, a 2 point slam lock will be used.
       6. Exterior of cover shall be devoid of hardware with the exception of the outside handle.
       7. Outside handle shall be vinyl coated, steel T-handle.
       8. Automatic hold-open device shall be formed from 3/16 inch (4.8 mm) steel flat bar and 1/2 inch (13 mm) diameter steel round stock with a vinyl grip.
       9. Padlock provisions provided on both interior and exterior of unit.
       10. Extruded rubber gasket shall be securely attached to the liner, providing a weather-tight seal.
    3. Pressure Control:
       1. Opening/closing assistance/resistance shall be provided with spring-loaded pressure intensifiers consisting of a telescoping tube; the top (outer) tube shall be 1-5/16 inches (33 mm) ,bottom (inner) tube shall be 1-1/2 inches (38 mm). Tubes shall be cadmium plated and chromate-sealed.
    4. Hardware:
       1. Corrosion resistant hardware and fasteners is standard.

\*\* NOTE TO SPECIFIER \*\* Optional accessories. Delete accessories not required.

* + 1. Accessories:
       1. Precision Safety Access Handrail, mounted to outside corner of hatch curb, to provide a fixed hand hold assist when entering or exiting the hatch.
       2. Precision Extend-A-Rail, to be mounted to hatch access ladder, to provide a retractable hand hold assist when entering or exiting the hatch.
       3. Precision Aluminum Guard Rail System with self-closing gate, mounted to exterior of hatch, to protect the roof opening.
    2. Fabrication:
       1. The hatch shall be completely fabricated ready for installation before shipment.
    3. Finish:

\*\* NOTE TO SPECIFIER \*\* Delete finish not required.

* + - 1. Finish: Red oxide primer.
      2. Finish: Mill finish aluminum.
    1. Source Quality Control:
       1. Products shall be tested in factory for proper operation before shipment.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. ALUMINUM SHIPS STAIRS
     1. Aluminum Ships Stairs:

\*\* NOTE TO SPECIFIER \*\* Substitute \*\* with total vertical height in inches.

* + - 1. Model: SL-\*\* Aluminum Ships Stair as manufactured by Precision Ladders, LLC.
      2. Capacity: Unit shall support a 1000 lb (454 Kg) total load without failure.
      3. Performance Standard: Units shall be designed and manufactured to meet or exceed OSHA 1910.25.
      4. Degree of Incline: 60 to 70 degrees.
    1. Components: Stair, mounting brackets and handrails on both sides.
       1. Stair Stringer: 5 inches X 2 inches X 3/16 inch (127 mm X 51 mm X 5 mm) extruded 6005-T5 aluminum channel.
       2. Stair Treads: 5-3/16 inches X 1-1/8 inches X 1/8 inch (131 mm X 29 mm X 3 mm). 1-1/4 inches X 1-1/4 inches X 1-1/4 inches angle welded to underside of treads. Treads shall be welded and bolted to stringer with 1/4 inch (6 mm) stainless steel bolts.

\*\* NOTE TO SPECIFIER \*\* Delete tread material not required.

* + - * 1. Tread Material: Extruded 6005-T5 aluminum with serrated slip resistance surface (standard).
        2. Tread Material: Bar grating.
        3. Tread Material: Formed plate.
      1. Stair Mounting Brackets:
         1. Floor Brackets: 2 inches X 3 inches X 1/4 inch (51 mm X 76 mm X 6 mm) aluminum angle.
         2. Top Bracket: 4-3/4 inches X 5 inches X 1/4 inch (121 mm by 127 mm by 6 mm) aluminum angle.
      2. Handrails: 1-1/4 inches (32 mm) Schedule 40, 6005-T5 aluminum pipe provided with internal aluminum fittings.
      3. Platform:
         1. Surface: Platforms 9 sf (0.84 sq m) or less shall be made of standard tread material. Platforms larger than 9 sf (0.84 sq m) shall have a bar grating surface.
         2. Toe Boards: 4 inches X 1/4 inch (102 mm X 6 mm) 6005 T-5 aluminum.
         3. Handrails: 1-1/4 inches (32 mm) Schedule 40, 6005-T5 aluminum pipe provided with internal aluminum fittings.

\*\* NOTE TO SPECIFIER \*\* Delete finish not required.

* + - 1. Finish: Mill finish on aluminum ladder components.
      2. Finish: Powder Coated.
      3. Finish: Anodized.

\*\* NOTE TO SPECIFIER \*\* Optional accessories. Delete accessories not required.

* + - 1. Extend-A-Rail, ladder safety post attached to one side of ladder to assist the climber in entering or exiting the top of ladder.
      2. 42 inch handrail extension (walk-thru) for accessing platforms, landings or elevated work spaces.
      3. Crossover stairs with platform between two ladders.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. METAL GUARD RAIL SYSTEM
     1. Aluminum Guard Rail System: Model AGRS-H as manufactured by Precision Ladders, LLC.
     2. Performance: Unit shall comply with OSHA 1910.28 and OSHA 1910.29.

\*\* NOTE TO SPECIFIER \*\* Delete configuration options not required.

* + 1. Configuration: Roof hatch mounted.
    2. Configuration: Floor mounted.

\*\* NOTE TO SPECIFIER \*\* Delete size options not required.

* + 1. Size: 30 x 36 inches (762 x 914 mm).
    2. Size: \_\_\_\_\_\_.
    3. Capacity: Supports a load of 200 lb (91 kg) applied in any direction.
    4. Components:
       1. Vertical and Horizontal Rails: Aluminum,6005-T5, 1-1/4 inches (32 mm) Schedule 40 Pipe with a 1-5/8 inches (42 mm) OD.
       2. Brackets:
          1. Roof Hatch Application: Y style 5 x 1-1/4 x 1/8 inch (127 x 32 x 4 mm) aluminum square tubing.
          2. Floor Opening Application: Flange style cast aluminum fittings 5-1/2 x 2-3/4 x 1/4 inch (140 x 70 x 7 mm).
       3. Self-Closing Gate: Aluminum,6005-T5, 1-1/4 inches (32 mm) Schedule 40 Pipe with a 1-5/8 inches (42 mm) OD, hinged on open side.
       4. Hardware: Corrosion resistant hardware and fasteners.
    5. Finish: Mill finish aluminum.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. LADDER SAFETY POSTS
     1. Ladder Safety Posts: Model ER-1 Extend-A-Rail Ladders Safety Post as manufactured by Precision Ladders, LLC.
     2. Performance Standard: Units designed and manufactured to meet or exceed ANSI A14.3, OSHA 1910.23, and OSHA 1910.29.
     3. Capacity: Supports a load of 200 lb (91 kg) applied in any direction.
     4. Components:
        1. Telescopic Post: Aluminum Schedule 40 Pipe with a 1.62 inches (42 mm) OD.
        2. Mounting Plate: 16 x 4 x 1/4 inch (407 x 102 x 6 mm) aluminum plate.
        3. Adjustable Tension Bushing: Delrin bushing with internal compression ring.
        4. Locking Slot and Knob: Allows safety post to remain in raised position. Raising and quarter turning will disengage post and allow it tor return to lowered position.
        5. Hardware: All mounting hardware shall be Type 316 stainless steel.
     5. Finish: Anodized aluminum, red post and black mounting plate.
  2. FABRICATION
     1. Completely fabricate ladder ready for installation before shipment to the site.
     2. Completely fabricate handrail components ready for field assembly to ladder before shipment to site.

1. EXECUTION
   1. EXAMINATION
      1. Do not begin installation until substrates have been properly prepared.
      2. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
   2. PREPARATION
      1. Clean surfaces thoroughly prior to installation.
      2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
      3. Examine materials upon arrival at site. Notify the carrier and manufacturer of any damage.
   3. INSTALLATION
      1. Install in accordance with manufacturer's instructions and approved submittals. Install in proper relationship with adjacent construction.
   4. PROTECTION
      1. Protect installed products until completion of project.
      2. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION